What is claimed is:

1. A thin film forming method comprising:

the first step of forming a crystal nucleus of perovskite structure of an oxide made up of lead and titanium on a substrate; and

the second step of setting the substrate having the crystal nucleus at a predetermined temperature, supplying an oxide gas and organic metal source gases of lead, zirconium, and titanium diluted with a diluent gas to the substrate, and forming on the substrate a ferroelectric film of perovskite crystal structure of an oxide made up of lead, zirconium, and titanium at a pressure of not less than 0.1 Torr.

2. A method according to claim 1, wherein

the first step comprises

setting the substrate at the predetermined temperature, supplying the oxide gas and organic metal source gases of lead and titanium to the substrate at a pressure of 0.001 to 0.01 Torr, and forming the crystal nucleus on the substrate.

3. A method according to claim 1, wherein

the first step comprises

setting the substrate at the predetermined temperature, supplying the oxide gas and organic metal

source gases of lead and titanium diluted with the diluent gas to the substrate at a pressure of 0.001 to 0.01 Torr, and forming the crystal nucleus on the substrate.

4. A method according to claim 1, wherein the first step comprises setting the substrate at the predetermined temperature, supplying the oxide gas and organic metal source gases of lead and titanium diluted with the diluent gas to the substrate at a pressure of not less than 0.1 Torr, and forming on the substrate the crystal nucleus.

5. A method according to claim 1, wherein the first step comprises setting the substrate at the predetermined temperature, supplying the oxide gas and organic metal source gases of lead and titanium diluted with a diluent gas made up of an evaporated gas of an organic solvent and another gas to the substrate by dissolving at least one of the organic metal sources of lead and titanium in the organic solvent and evaporating and supplying the organic solvent, and forming the crystal nucleus on the substrate.

6. A method according to claim 1, wherein

the second step comprises

supplying organic metal source gases of lead, zirconium, and titanium diluted with the diluent gas, to which an evaporated gas of an organic solvent is added, by dissolving at least one of organic metal sources of lead and titanium in the organic solvent and evaporating and supplying the organic solvent.

7. A method according to claim 1, wherein the oxidizing gas and organic metal sources are respectively supplied to the substrate through different paths.

8. A method according to claim 1, wherein the diluent gas is irrelevant to formation of a ferroelectric film.

9. A method according to claim 8, wherein the diluent gas is an inert gas.

10. A thin film forming apparatus, comprising:

a sealable reactor in which a substrate as a film formation target is placed;

evacuating means for evacuating an interior of the reactor to a predetermined pressure;

first source gas generation means for generating a lead source gas made up of an organic metal

compound containing lead and a titanium source gas made up of an organic metal compound containing titanium;

second source gas generation means for generating the lead source gas, the titanium source gas, and a zirconium source gas made up of an organic metal compound containing zirconium;

oxidizing gas generation means for generating an oxidizing gas;

dilution means for diluting a gas generated by said second source gas generation means with a diluent gas;

source gas supply means for supplying to the substrate in said reactor a gas generated by said first source gas generation means and a gas diluted by said dilution means; and

oxidizing gas supply means for supplying to the substrate in said reactor an oxidizing gas generated by said oxidizing generation means.

11. An apparatus according to claim 10, wherein said evacuating means is capable of evacuating the interior of said reactor to a pressure of not more than 0.001 Torr.